ALGEBRA 1 Name:_____

A Finely Crafted O'Brien Unit 3 Opportunity Day

Computer Section: You may use your computer. Use a pencil. Show all work and circle your answer. Use your time wisely; you will be able to earn additional credit after the timed portion of the test by completing Supercorrections. When you finish, put away your computer and you can come up to get the non- computer part—you may continue to work on both sections without your computer.

1. Solve each equation.

a. $x + 12 = 85$

b. $\frac{w}{5} = 35$

c. $t - 12.3 = 87.8$

d. $14p = 84$

2. Solve each equation.

a. $2b + 6 = 14$

b. $4y - 10 = 12$

3. Fill in the blanks to solve each equation.

a.

$3p - 5 = 13$

$3p =$ _____

$p =$ _____

b.

$\frac{a+6}{3} = 5$

$a + 6 =$ _____

$a =$ _____

4. At the right is a "solution" to the equation $6(a+2)-4(a-1)=24$.

$$6(a+2)-4(a-1)=24$$
$$6a+12-4a-4=24$$
$$2a+8=24$$
$$2a=16$$
$$a=8$$

a. Check the answer $a = 8$ back in the equation $6(a+2)-4(a-1)=24$ and show that it **doesn't** work.

b. Circle the error in the "solution."

c. Correctly solve $6(a+2)-4(a-1)=24$.

5. *"Two thirds of what number is 7?"* This can be modeled with algebra as $\frac{2}{3}\cdot y = 7$. **Solve each below**.

In solving this equation Brooks chooses to divide both sides by $\frac{2}{3}$ and gets $y = 7 \div \frac{2}{3}$.

$y =$

But Ben chooses to multiply both sides by the reciprical $\frac{3}{2}$ and gets $y = 7 \times \frac{3}{2}$.

$y =$

Max isn't satisified with either prefering to multiply each side by 3, then divide both sides by 2 and gets $y = 7 \times 3 \div 2$.

$y =$

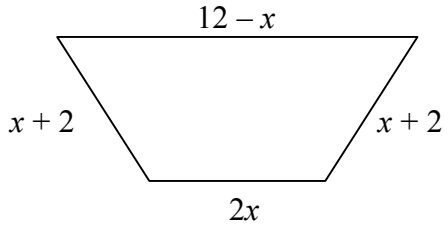
Pick a method and solve $\frac{4}{5}\cdot x = 22$. Show your work.

NON-CALCULATOR Name:_____

6. Solve the following literal equations for the indicated variable.

a. $C = \pi d$ for π b. $T + D = R$, for T b. $y = mx + b$, for x

7. The perimeter of the trapezoid shown below is 25. Make an equation and solve it to find the value of x.



8. Mr. O'Brien asks the class to solve the equation $3(x-2)+x=4x-6$.

Marissa says, "That's easy- the answer is $x=3$*."*

Mikayla says, "I thought the answer was $x=2$*."*

Who (if either) is correct and why?

9. Solve each equation.

a. $4 + 5x = 4$

b. $2m + 5 = \frac{m}{5} - 4$

10. We know that so long as we do the same thing to each side of an equation, we will always obtain another equation with the same answer as the first. Below are two methods for solving $\frac{m}{5} - 3 = 4$. **Fill in the steps for each solution**.

$\frac{m}{5} - 3 = 4$

_____ Add 3 to each side.

_____ Multiply each side by 5.

$\frac{m}{5} - 3 = 4$

_____ Multiply each side by 5.

_____ Add 15 to each side.

If you don't get the same answer for *m*, you know you've made an error! Find your mistake…

11. Given the problem $3(x + 2) = 10$ there are at least two possible first moves. Option 1 is to **distribute the 3**. Option 2 is to **divide both sides by 3**.

a. Solve using Option 1:

$3(x + 2) = 10$

b. Solve using Option 2:

$3(x + 2) = 10$

Option 1 seems to be the easier method in this case. Write a new equation by *changing a <u>single number</u>* in $3(x + 2) = 10$ which would make Option 2 a more prefered method. (Note: don't make a change to 0, 1, or –1)

<u>Bonus</u>: Write an equation that involves two different operations and has a solution of $x = 6$.